

GLINKOV, M.A.. doktor tekhnicheskikh nauk, professor.

Principles of fluid mechanics in baths and the heat-working of  
open-hearth furnaces. Stal' 16 no.4:356-358 Ap '56.(MIRA 9:7)  
(Open-hearth furnaces)

GLINKOV, M.A., professor, doktor tekhnicheskikh nauk; MEN'SHIKOV, R.I.,  
kandidat tekhnicheskikh nauk.

Investigating heat exchanges in open-hearth furnace combustion  
chambers. Sbor. Inst. steli no.35:146-157 '56. (MLRA 10:8)

1. Kafedra metallurgicheskikh pechey.  
(Open-hearth furnaces) (Heat--Transmission)

$\Delta P_{air} = \rho g \Delta h$

$\Delta P_{flame} = \rho g \Delta h$

Translation from: Referatnyy zhurnal "Metallurgiya" No. 11, p. 79 (USSR)

AUTHORS: Glinkov, M. A., Kryvendin, V. A.

TITLE: The Pressure Distribution in High-temperature Ceramic Reactors (Raspredeleniye davleniya v vysoekotempernurnikh keramicheskikh reaktorakh)

PERIODICAL: V. b. i. Prognoz chal'j. Moscow: Metallurgizdat, 1956, pp. 158-165

ABSTRACT: A report on experiments on the determination of the pressure drop of the air and of the flue gases in ceramic reactors (R) in which the flue gases proceed downward through vertical pipes and the air moves in a loop-shaped path from the bottom toward the top passing horizontally between the staggered flue-gas pipes. In order to determine the pressure drop of the air and the flue gases at any point in the R, it is necessary to know their entrance pressures and the pressure at the given point of the R. The pressure change of the flue gases is readily computed since the frictional resistance and the geometric head are known. The computation of the resistance to the movement of air is more complicated. It is composed of the resistance of a group of flue-gas pipes and of the  $10^{-2}$  mm at

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17-1987-11-13-31

The Pressure Distribution in High-temperature Ceramic. (cont.)

the end of each group. The resistance of such turns, which depends on the velocity of air and on the number of the rows of open orifices, was determined by means of an aerodynamic model of the R. At  $R_e > 4700$ , the resistance of the turns remains constant. When the number of rows of open orifices is increased from 1 to 4, the resistance is considerably reduced; however, any further increase in the number of rows of open orifices has almost no effect and the resistance remains practically constant.

M. R.

1. Ceramic recuperators. pressure distribution

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GLINKOV, M.A., professor, doktor tekhnicheskikh nauk; VAVILOV, N.S., kandidat  
tekhnicheskikh nauk.

Heat exchange in metallurgical furnace combustion chambers. Sbor.  
Inst. stali no.35:166-185 '56. (MLRA 10:8)

1. Kafedra metallurgicheskikh pechey.  
(Metallurgical furnaces) (Heat--Transmission)

GLINKOV, M.A., professor, doktor tekhnicheskikh nauk; KRIVANDIN, V.A.,  
kandidat tekhnicheskikh nauk.

Characteristics of heat exchange at the stack side of a tubular  
ceramic recuperator. Sbor. Inst. stali no.35:186-200 '56.

(MLRA 10r8)

1. Kafedra metallurgicheskikh pechey.  
(Heat regenerators) (Heat--Transmission)

17-1967 12-23138

Translation from: Referativnyy zhurnal Metallurgiya 1957 Nr 11 p 40 (USSR)

AUTHORS: Glinkov, M. A. Markov, B. I.

TITLE: The Fusion of a Layer of a Metallic Charge Heated From Above  
(Plavleniye stoyka metallicheskoy shchity na grevayemogo sverkhu)

PERIODICAL: V. b. i. Prezravo srl. Moscow: Metalurgizdat 1956 pp 133-138

ABSTRACT: To conduct laboratory studies of the process of fusion ( $F$ ) of a metallic charge (Ch), an experimental installation was designed which consisted of two adjoining chambers: an upper chamber containing the heating unit and a lower chamber containing the built-in with the fusible charge. In order to reduce heat loss, the internal surfaces of the chambers were coated with Ag and equipped with a system of evaporation cooling. Plastic selected as the charge material because it may be utilized in charges of all shapes and dimensions. The charge was placed into a steel shell fitting snugly into a steel cylinder equipped with a mesh cover intended to prevent the charge from rising above the top of the cylinder. The upward movement of the shell was accomplished by means of a special rod activated through a gear.

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167-1957-12 23138

The Fusion of a Layer of a Metal Charge Heated From Above

The advance of the rod is a measure of the settling of the charge. To prevent the oxidation of the Pb the basin is filled with No. For all fusion processes readings are taken on the variation of the height of the charge layer with time, the amount of heat imparted to the charge, and the temperatures at various points of the layer. A series of fusions, identical in all respects, was performed with interruptions in order to observe the condition of the charge at various stages. A study of the charge cooled at different stages of the fusion process showed that the melt did not flow to the bottom but that it advanced downward along a single front enveloping the solid lumps and giving up its heat to them. In rapid fusion the melt filled all spaces between the lumps, thereby preventing the liquid melt from transferring heat to the lower layers of the charge. From an analysis of the experimental melts the fusion process may be divided into three stages: the heating of the surface of the charge to the melting point, the fusion preceding the complete settling of the layer, and the fusion after the complete settling of the layer and after the formation of a free liquid surface.

Card 2/2

M. R.

1. Job Blurry-MK
2. Furnace Heating
3. Fusion through Applications

137-58-6-11676

Translation from Referativnyy zhurnal. Metallurgiya, 1956, Nr 6, p 65 (USSR)

AUTHORS Glinkov, M.A., Men'shikov, R.I., Morozov, V.A., Shorin, A.F.

TITLE Thermal Operation of an Open-hearth Furnace When Oxygen is Used to Intensify the Combustion Process (Teplovaya rabota martenovskoy pechi pri primenennii kisloroda diva intensifikatsii protsessa gorenija)

PERIODICAL V sb. Primenenie kisloroda v metallurgii. Moscow, Metallurgizdat, 1957, pp 95-114

ABSTRACT Results are presented of an investigation on the introduction of O into the flame jet through a tuyere from the sides of the duct into a 200-t furnace at the "Zaporozhstal'" Works. When the oxygen enrichment of the air is 25% and the maximum heat input is 33.2 mill. kcal/hr, output rose by 32.2% and the nominal consumption of fuel dropped by 16.8%. With 30% enrichment and a maximum heat input of 35.4 mill. kcal/hr, the figures were, respectively, 61.0 and 35.0% of those of non-oxygen heats. Ratios for output and unit fuel consumption to average thermal stress and degree of enrichment of the air by O<sub>2</sub> are given. The following factors are examined: the conditions of

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137-55-6-11678

Thermal Operation of an (cont.)

temperature in the course of a heat, the distribution of heat flow across the area of the bath, and the change in the composition of combustion products in the working space. Heat balances are compiled as an average for a heat for various thermal and oxygen regimes.

G.G.

1. Oper. heat th. chamber for various oxygen + Appl. heat th.

Card 2/2

SOW-137-58-8-16508

Translation from: Referativnyy zhurnal Metallovedeniya i Tsvetnykh Metallov, No. 5, p. 39 (USSR)

AUTHORS Glinkov, M.A., Demin, G.I.

TITLE Recirculating-heat Steel Smelting Furnaces (Vtotsirkulyavayushchiye staleplavil'nye pechi)

PERIODICAL V sb. Primenenie kishlorodovykh metallurgii. Moscow, Metallurgizdat, 1957, pp. 186-216

ABSTRACT Recirculating-heat furnaces (RF) are classified as a third type of steel smelting furnaces characterized by bilateral heating of the hearth (H); unlike open-hearth furnaces, the process of heating is continuous (the supply of heat to the H is uninterrupted) which makes it possible to utilize the principle of heat recovery (analogous to the method employed in direct-current furnaces) rather than regeneration, as is typical of open-hearth furnaces. The RF may operate with hot or cold blowing. They may operate on nonenriched air alone, provided the latter has been heated to a high temperature because complete combustion of fuel in the H of an RF requires considerably smaller amounts of excess air than in the case of direct-current or open-hearth furnaces (1.1 instead of 1.0; consequently, the

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SOV/137-58-8-16508

**Recirculating-heat Steel Smelting Furnaces**

temperature effect of air which had been preheated to a temperature of 800°C in an RF is equivalent to the effect of air preheated to 1100° in an open-hearth furnace. The authors present data of an investigation of a 10-ton fuel-oil operated RF which had been placed into operation in 1952 at the Novo-Tul'skiy metallurgical plant and which operated without heated-air blowing until 1955, at which point it was equipped with tubular fireclay tubes recuperators. Prior to 1955, the RF operated on air enriched with 70-80% of O<sub>2</sub> at a pressure of approximately 2 atm. Hot air from the recuperators equipped with end-mounted tuyeres with nozzles, passes into the H through short uptakes which are inclined at a 16° angle. Since the volume of the checkered brick work of the recuperator constitutes 70% of the required volume, it was found possible to heat the air in amounts only up to 3000-3500 nm<sup>3</sup>/hr. Expressed in millions of kcal/hr, the thermal loading of the furnace constitutes 8.5-9.0 during the charging-fusion period, and 1.0-4.5 during the finishing stages. As a result of the investigation it was found that the RF's are capable of smelting soft iron (of the Arinco type), steels Nrs 2 and 3, carbon steels Nrs 30, 40, 45, and, with particular ease, low-carbon types of steel, because the mean rate of combustion of C amounts to 2-4%/hr. The smelting time varied between 1.98 and 2.82 hrs., the consumption of conventional fuel fluctuated from 965 during smelting on completely liquefied

Card 2 3

30W 18° 8.1650S

Proceedings of the meeting

The following is a summary of the proceedings of the meeting held on 17/6/01 regarding the proposed construction of a new smelt smelter on a coastal town called S. 1650S. The meeting was organized by the Army of Free Peoples. The purpose of the meeting was to discuss the employment of mercenaries and the use of chemical weapons. The meeting also considered the construction of a new smelter, the proposed location, the proposed practices, the cost of construction, the projected timeline, and the predicted temperature of the smelter.

A.L.

Card 5

SOV/137-58-7-14369

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 7, p 60 (USSR)

AUTHORS: Glinkov, M.A., Ivanov, N.I.

TITLE: A Recirculation Method of Oxygen Use in Large Open Hearths  
(Retsirkulyatsionnyy metod primeneniya kisloroda v bol'-  
shegruznykh martenovskikh pechakh)

PERIODICAL: V sb. Primeneniye kisloroda v metallurgii. Moscow,  
Metallurgizdat, 1957 pp 255-284

ABSTRACT: An investigation is made of the operation of a 185-t open-hearth furnace (OH) with O<sub>2</sub> employed by a recirculation method (RM) consisting of supplementary heating of the OH at various periods during the heat by fuel burnt in a blast highly enriched by O<sub>2</sub> (as much as 80-100%), the fuel and the blow being delivered to the melting chamber of the OH through both checker ports simultaneously. All other conditions being equal, heating from both sides makes it possible to increase the total heat intake of the bath by 19-20% while a high level of enrichment of the blast by oxygen makes for a sharp reduction in thermal load on the outgoing side of the furnace. Thus, when the blow is enriched 40%, and the thermal load at the valve is

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SOV/137-58-7-14309

A Recirculation Method of Oxygen Use in Large Open Hearths

$35 \cdot 10^6$  kcal/hr,  $15 \cdot 10^6$  kcal/hr are emitted from the melting chamber, but with 80% O<sub>2</sub> this figure is  $9 \cdot 10^6$  kcal/hr, and with pure O<sub>2</sub> it is only  $7 \cdot 10^6$  kcal/hr, i.e., almost as much as is rejected to the stack when the furnace is operated by standard open-hearth practice (SOP). The use of high-calorie fuel makes it possible in turn to reduce the quantity of combustion products per 1000 kcal of heat input to the furnace. Investigation has established that at identical thermal load on the valve, the use of RM only during the melting period provides an increase in OH output rate of 10-15 t/hr, i.e., 30-50% higher than the rate of output of this same furnace when worked by (SOP). The rate of melting of the charge in this case exceeds that by the SOP by 45-50%. When the RM is used during the charging, heating, and melting periods, the smelting rate may attain 96.2 t/hr, while the length of the heat is cut to 3.5 hours instead of 5 hours when the furnace is operated with the RM during the melting period only. The unit consumption of conventional fuel is reduced from 129 to 95.11 kg/t when the RM is used during the melting period only, and to 81.6 kg/t when the RM is used during the periods of charging, heating, and melting. The consumption of O<sub>2</sub> per ton of steel under these conditions rises from 50.0 to 66.81 and 129.1 m<sup>3</sup>, respectively. When the furnace is operated by the RM, no need exists to change the charge in the direction of greater or smaller amounts of ore than is used in SOP.

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SOV 137-55-7-14369

A Recirculation Method of Oxygen Use in Large Open Hearths

The mean rates of carbon burn-off during the melting period were (in % per hour) 1.2-2.2, while the maximum was 3-3.4 and the rate during the working period was 0.83-1.04. An Fe balance compiled for all the experimental heats shows that operation of the furnace by the RM during the melting period only leads to a loss of 0.3-3% Fe by burning, while use of the RM during the charging, heating, and melting periods increases this loss to 1.8-4.8%. An increase in the liquid-pig-iron contents of the charge from 60-70% to 90-100% does not affect the hourly output rate of the OH, the unit consumption of fuel and of O<sub>2</sub> as reported above, but makes it possible to attain an Fe pick-up of 3.7-6.1%. The temperature of the combustion products in the uptakes is no higher than with the SOP, the temperature of the uptake walls being 1680-1700°C. The temperature of the gas checkers dropped during the period of use of the RM (as combustion products were not passed through them), and the temperature of the air checkers fluctuated from 1260 to 1350°. The temperature of the roof and the air checkers is easily regulated by changing the fuel and O<sub>2</sub> flow.

1. Open hearth furnace--Performance characteristics of the open hearth

N.I.

Card 3/3

GLINKOV V. M.

DANIKHELKA, A., doktor, inzh.: MIKHAYLOV, O.A., kand. tekhn. nauk; GONCHARENKO, N.I.; KLIMASENKO, L.S.; OYKS, G.M., prof., doktor tekhn. nauk; SEMENENKO, P.P.; MORCZOV, A.N., prof., doktor tekhn. nauk; GLINKOV, M.A., prof., doktor tekhn. nauk; KAZANTSEV, I.G., prof., doktor tekhn. nauk; KOCHO, V.S., prof., doktor tekhn. nauk; ENEKESH, Sh., kand. tekhn. nauk; MOROZENSKIY, L.I., kand. tekhn. nauk; GURSKIY, G.V.; SPERANSKIY, V.G.; NOVIK, L.N., kand. tekhn. nauk, starshiy nauchnyy setrudnik; SHNEYEROV, Ya.A., kand. tekhn. nauk; PAPUSH, A.O., kand. tekhn. nauk; MAZOV, V.F.; SAMARIN, A.M.

Discussions. Biul. TSNIICHM no.18/19.17-05 1977. (MIRA 11:4)

1. Glavnyy staleplavil'shchik Ministerstva metallurgicheskoy promyshlennosti i rudnikov Chelyabinskoy respublikki (for Danikhelka). 2. Direktor TSentral'nogo instituta informatsii chernoy metallurgii (for Mikhaylov). 3. Direktor Ukrainskogo instituta metallov (for Goncharenko). 4. Glavnyy staleplavil'shchik Kuznetskogo metallurgicheskogo kombinata (for Klimasenko). 5. Zaveduyushchiy kafedroy metallurgii stali Moskovskogo instituta stali (for Oyks). 6. Zametniy glavnego inzhenera zavoda im. Serova (for Semenenko). 7. Zaveduyushchiy kafedroy metallurgii stali Chelyabinskogo politekhnicheskogo instituta (for Morczer). 8. Zaveduyushchiy kafedroy metallurgicheskikh pechey Moskovskogo instituta stali (for Glinkov). 9. Zaveduyushchiy kafedroy metallurgii stali Zhdanovskogo metallurgicheskogo instituta (for Kazantsev). 10. Zaveduyushchiy kafedroy metallurgii stali Kiyevskogo politekhnicheskogo instituta (for Kach).

(Continued on next card)

DANIKHELKA, A.---(continued) Card 2.

11. Nachal'nik tekhnicheskogo otdela Ministerstva chernoy metal-lurgii Vengerskoy Narodnoy Respubliki (for Kookash). 12. Zame-stitel' direktora Novotul'skogo metallurgicheskogo zavoda (for Guraskiy). 13. Nachal'nik tekhnicheskogo otdela zavoda "Dnepro-spetsstal'" (for Speranskiy). 14. Institut metallurgii im. Baykova AN SSSR (for Nevik). 15. Nachal'nik staleplastil'nyey laboratorii Ukrainskogo instituta metallicheskogo (for Suneyev). 16. Nachal'nik laboratorii po nepreryvnoy razlivke stali Zhdanovskogo filiala TSentral'nego nauchno-issledovatel'skogo instituta Ministerstva stroitel'stva promyshlennosti (for Papush). 17. Nachal'nik marte-novskogo tsentrha zavoda "Zaporozhstal'" (for Matov). 18. Zemestitel' direktora Instituta metallurgii im. Baykova AN SSSR, chlen-korrespondent AN SSSR (for Samoilov).

(Steel-Metallurgy)

137-58-6-11703

Translation from Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 70 (USSR)

AUTHORS Glinkov, M.A., Mitkalinnyy, V.I.

TITLE: The Thermal Performance of an Open-hearth Furnace Operating by the Scrap Process (Teplovaya rabota martenovskoy pechi pri skrap-protsesse)

PERIODICAL: Sb. Mosk. in-t stali, 1957, Vol 37, pp 22-32

ABSTRACT A description of the results of 300 experimental heats in a 70-t furnace at the "Hammer and Sickle" Works, with delivery of O<sub>2</sub> into the heavy-oil jet flame, are described. O<sub>2</sub> enrichment of the blow was 25-35%. Changes occurring in the temperature of the roof and flame in the course of a heat, at various rates of O<sub>2</sub> flow, are examined. The temperature of the roof during the charging period varied in accordance with the duration thereof from 1400 to 1650°C, attaining a minimum at the end of the charging period. During the melt-down and working period, the temperature of silica-brick roofs attained 1650°, while basic roofs reached 1780°. The temperature of the flame, measured by an optical pyrometer, was 1800° during the charging period and 1850° at the end of the melt-down in heats without

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137-58-6-11703

The Thermal Performance (cont.)

O<sub>2</sub>, but with a 25% enrichment of the blow, the flame temperature rose to 1930° during charging, while 32% enrichment brought it to 1990°.

G.G.

1. upon heating that combustion system's properties, and particularly flame temperature--first results.

Card 2/2

137-58-6-11676

translation from: Reaktionen im Raum. No. 5, 1957, p. 65 (USSR)

AUTHORS: Gilinkov, M. A., Vavilov, N. S.

TITLE: Heat Exchange in the Space Above the Path of a Recirculation-type Steel-foundry Furnace (Peploobmen v postranstve nad vannoy retsirkulyatsionnoy staleplavil'noy pech')

PERIODICAL: Sb. Mosk. in-t stali, 1957, Vol. 37, pp. 305-326

ABSTRACT: A presentation of the results of an investigation of heat exchange in a 10-ton steel-foundry recirculation-type furnace (RF) having 9.0 m<sup>2</sup> hearth area and simultaneous two-sided heavy-oil feed at 2-3 atm excess pressure, sprayed by compressed air at 4-5 atm excess pressure. The heat flux, measured by a heat gage of special design rises gradually during the heat and then drops at the end of the working period. The heat flow over the bath,  $Q_B$ , varies across the width of the furnace from one melt to the next, from between 800-1,100 thousand kcal/m<sup>2</sup>hr at the front wall to 1200-1450 rearwards of the middle of the furnace, and drops to 1050-1150 thousand kcal/m<sup>2</sup>hr at the rear wall. The take-up of heat in the bath,  $\Delta Q$ , varies in similar fashion, attaining values of c. 100 thousand kcal/m<sup>2</sup>hr.  $Q_B$  varies insignificantly along the length of the

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157-58-6-11676

**Heat Exchange in the Space (cont.)**

furnace, and  $\Delta Q$  attains a maximum in the center of the furnace. The heat flux is distributed across the area of the furnace considerably more uniformly than in an open hearth, since the two-sided fuel feed makes it possible to maintain identical thermal conditions in either half of the working space.  $Q$  varies during a melt as follows through the height of the working space from 1100-1250 thousand kcal/m<sup>2</sup>hr at a point 300 mm from the surface of the bath to 850-900 at a height of 1200-1300 mm. Curves are presented for the variation of calculated temperature and in black-body radiation of the gas at different heights. Heat emissivity by radiation is 1500-2500 kcal/m<sup>2</sup>°C hr, while for an open-hearth furnace it does not exceed 1600. The bath surface is 70-80% black and the temperature of the RF bath surface is 1700-1800°C. The temperature of the metal is the same as in an open-hearth furnace. In the RF the slag undergoes considerably greater overheating. In the RF there is virtually no slag during the heat when the bath is not undergoing vigorous agitation. The directed heat exchange plays a significant role.

G G

1. V. V. Kostylev, "Heat transfer in the space between the bath and the metal melt," *Metallurgicheskoe proizvodstvo*, No. 1, p. 24, 1967.

Card 2 2



SOV/137-37-1-3

Translation from: Referativnyy zhurnal. Metallurgiya, 1957, Nr. 4, p. 5 (USSR)

AUTHORS: Glinkov, M. A., Krivandin, V. A., Bugrova, B. A.

TITLE: Directed Flame Radiation With Uneven Temperature Distribution  
(Napravленная радиация пламени при неравномерном распределении температур)

PERIODICAL: Naučn. dokl. vyssh. shkoly. Metallurgiya, 1958, Nr. 1, pp. 97-101

ABSTRACT: The investigation was carried out on a stand consisting of a shielded combustion chamber with three burners (of the concentric-tube type) forming three parallel, vertical flame jets set so close together that they may be considered as layers of a single flame sheet. The temperature of each layer of the flame was measured by a bare Pt - Pt/Rh thermocouple and the total radiation along the length of the flame was measured by a diaphragmed differential thermopile (Cu-constantan). City gas with a heat value of 300 - 660 kcal/m<sup>3</sup> was burned. Data are adduced on the effect of the distribution of temperatures, thermal load, excess-air coefficient, enrichment of air with O<sub>2</sub>, and carburation with pulverized coal through the thickness of the flame on its radiation. Changes in the layer closest to

Card 1.2

SOV/37-59-1-1

Directed Flame Radiation With Uneven Temperature Distribution

the measuring device have a predominant effect on the radiation of the flame jet.

G.G.

Card 2/2

SOV 157-59-1-32\*

Translation from: *Referativnyy zhurnal. Metalurgiya*, 1959, No. 1, p. 11 (USSR)

AUTHORS: Glinkov, M. A., Kostern, V. V.

TITLE: An Investigation of the Thermal Performance of a Recirculating Steel-smelting Furnace Designed by Prof. M. A. Glinkov Employing Ceramic Recuperators (Issledovaniye teplovoy raboty retsirkulyatsionnoy staleplavil'noy pechi sistemy prof. M. A. Glinkova s keramicheskimi rekuperatorami)

PERIODICAL: *Izv. vyssh. uchebn. zavedeniy. Chernaya metallurgiya*, 1958, Nr 1, pp 94-111

ABSTRACT: The 10-ton recirculating steel-smelting furnace (RSF) is equipped with two recuperators having a total area of 345 m<sup>2</sup>. The furnace is fired with fuel oil, the degree of enrichment of air with O<sub>2</sub> being varied from 45 to 21% in the course of a heat. Compared with corresponding factors in open-hearth furnaces operated without O<sub>2</sub>, the production efficiency of the RSF's is greater. The consumption of O<sub>2</sub> amounted at times to 270 kg/ton. An increase in the degree of oxidation of the slags constituted the major technological difficulty of the process; however, by means of appropriate selection of an

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SOV137-59-1-329

An Investigation of the Thermal Performance of a Recirculating (cont.)

optimal oxygen-air ratio, this condition could be reduced to 14-18%  $\Sigma Fe$ . The degree of oxidation of the metal was even lower in this process than in the case of standard open-hearth furnaces. A reduction in  $O_2$  consumption is not justified economically since the cost of  $O_2$  constitutes only a comparatively small fraction of the cost of a ton of steel. Owing to the insufficient length of the hearth, the advantages of two-sided heating of molten metal could not be fully evaluated, since the meeting of the flames in the center of the furnace produces a vigorous stream of gases resulting in the disintegration of the central portion of the crown of the furnace. The roof of the furnace could withstand a maximum of 175 smeltings. Because of the vigorous recirculation occurring within the hearth, the amount of smelting dust carried into the recuperators was considerably reduced (by 5-8 times), which greatly improved the operational performance of the latter.

M. M.

Card 2/2

AUTHOR: Glukov, I. A., Tsvetkov, L. A.

DOE 163-58-2-22/46

TITLE: *Opredelenie sredneye sverklyuchchosti channela po srednemu sverklyuchchosti radioaktivnykh indikatorov v reaktornom kanale s pomoshch'yu radioaktivnykh indikatorov*

INST. OF C.R.: Naučno-issledovatel'skaya vysschaya shkola po metalloobrabotke, K. metallurgiya, 1958.  
(Institut issledovanii i nauchno-issledovatel'skaya shkola)

ABSTRACT: A method for determining the mean flow rate in short channels by means of radioactive indicators was worked out.  $\text{Ag}^{113}$  was used as  $\gamma$ -radioactive indicator.  $\text{Ag}^{113}\text{Br}$ , as water soluble compound, an equal distribution of the radioactive indicator introduced along the vertical direction of the channel was achieved, and the distribution of the flow of combustible products in the lower cross section of the channel was determined. The flow rate of the combustible products in the vertical direction of the channel amounts to  $1 \pm 0.01$  sec with a probable error of 8.5%. The method suggested makes it possible the determination of the boundary of the flow in the vertical direction of the channel. There are 6 figures and 7 tables.

"APPROVED FOR RELEASE: 09/24/2001

CIA-RDP86-00513R000515410006-9

measuring the flow at the outlet of the tank. The flow was measured by a flow meter.

At 10:00 AM: TURKOVSKY AND STANISLAVOVIC ARRIVED.

At 10:30 AM: MEETING WITH TURKOVSKY.

At 11:00 AM:

APPROVED FOR RELEASE: 09/24/2001

CIA-RDP86-00513R000515410006-9"

3-56-3-4/32

AUTHOR: Glinkov, M.A., Professor, Doctor of Technical Sciences

TITLE: New Progressive Features in Teaching General Scientific Subjects (Novoye, progressivnoye - v prepodavaniye otshchenauchnykh distsiplin) Must We Expand Only the General Scientific Cycle? (Nuzhno-li rassmiryati tol'ko otshchenauchnyy tsikl?)

PERIODICAL: Vestnik Vysshey Shkoly, fiz. hr. 5, pp. 11 - 24 (USSR)

ABSTRACT: The author disagrees with the following extreme viewpoints regarding higher school teaching methods: that special technological subjects should be reduced to a minimum while the general scientific and general engineering subjects should be increased; and that training in the student specialties should be increased. He explains how extremes can be reconciled and concludes that in order to improve teaching plans and programs there must be an increase in basic subjects and a transfer of the "theoretical fundamentals" (common to various specialties) from the special subject to the basic subject category. General scientific subjects should be increased only when badly needed, as in mathematics. The author admits that the better the students master formal mathematics, the easier they will comprehend engineering.

Card 1/2

3-58-3-4/52  
New Progressive Features in Teaching General Scientific Subjects. Must We  
Expand Only the General Scientific Cycle?

However, if the basic subjects are not sufficiently developed the prevalence of general scientific subjects in the curriculum will not yield the desired results. He emphasizes the importance of increasing the level of training in the theoretical fundamentals of technology. There is one Soviet reference.

ASSOCIATION: Moskovskiy institut stali imeni I. V. Stalina (Moscow Institute of Steel imeni I.V. Stalin)

AVAILABLE: Library of Congress

Card 2/2

NPP No.

L. S. I., N. A., T. G. M. N. A.

SNT, 1977-1981

TITLE:

Calculation of the Efficiency of the Heat Radiation of the  
Chambers of the Heating System of the Industrial Building  
of the Institute of Metallurgy and Materials Processing  
of the USSR Academy of Sciences in Dzerzhinsk

LAST NAME:

V. V. Kuznetsov, N. A. Metallurgiya, 1981,

No. 1, p. 10-13

ABSTRACT:

In the article the calculation of efficiency of heat radiation of  
the heating system in industrial furnace. A set of  
equations for light shielding was constructed. The values  
of the coefficients of heat radiation in the radiating system  
were determined. The resulting current  
intensity was determined. The angular coefficient  $\psi_{\text{rad}}$   
in the five upper parts of the chamber were calculated  
by the following equation:

$$\psi_{\text{rad}} = \frac{\sum F \psi_{\text{rad}} + F \psi_{\text{end}} + F \psi_{\text{side}}}{\sum F}, \quad \text{the same way } \psi_{\text{end}} \text{ and } \psi_{\text{side}}$$

REFERENCES:

and obtained  $\psi_{\text{rad}}, \psi_{\text{end}}, \psi_{\text{side}}$  for the calculation of the

2. In the first period of the investigation, the following information was obtained:

1) A number of the most extensive in the heating shifts were made. The main objective of each shift was to obtain information about the quality of the steel billets. These were analyzed by the laboratory. The results were recorded in reports and sent to the plant management. The reports contained no classification information. There were two types of reports: "internal" and "external," the latter being prepared by the laboratory. The former was kept in the plant's files, while the latter was sent to the Ministry of Defense.

ASSOCIATION: Association of Steel and Metal (Moscow Steel Institute)

SUBMISSION: April 1941

SECRET

"APPROVED FOR RELEASE: 09/24/2001

CIA-RDP86-00513R000515410006-9

GLINOV, M.A., doktor tehn.nauk, prof.; VY.SUDK, V.M., kand.tehn.nauk

New design of recuperative soaking pits. Izv. vys. ucheb. zav.:  
chern. met. no.7:62-89 J1 '58. (VTRA 11:10)  
(Furnaces, Heating;)

APPROVED FOR RELEASE: 09/24/2001

CIA-RDP86-00513R000515410006-9"

GLINKOV, M.A., prof., doktor tekhn.nauk; PISKUNOV, A.A., Inzh.

Modeling radiant heat exchanges in industrial furnaces by means of light. Izv.vys.ucheb.zav.; chern.met. no.11:65-26 '58.

(MIRA 12:1)

1. Moskovskiy institut stali. Rekomendovano kafedroy metallurgicheskikh pechey.

(Metallurgical furnaces) (Heat--Transmission)  
(Engineering models)

GLINKOV, Mark Alekseyevich; SUSHKIN, I.N., red.; VAYNSHEV, Ye.B.,  
tekhn.red.

[Principles of the general theory of the thermal operation of  
furnaces] Osnovy obshchei teorii teplovoi raboty pechey.  
Moskva, Gos.sciuchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi  
metallurgii, 1959. 416 p. (MIRA 13:1)  
(Thermodynamics) (Furnaces)

AUTHORS: Glinkov, M.A., Doctor of Technical Sciences and  
Demin, G.I., Candidate of Technical Sciences

TITLE: Recirculation-type Recuperative Steelmaking Furnace  
(Retsirkulyatsionnaya rekuperativnaya staleplavil'naya  
pech')

PERIODICAL: Stal', 1959, Nr 1, pp 24 - 31 (USSR)

ABSTRACT: The design and operation of a recirculation-type recuperative steelmaking furnace of 10 tons capacity is described. A recirculation furnace differs from an open-hearth furnace in that it operates with both burners simultaneously. Impact of two streams of gases in the centre of the furnace causes their intensive recirculation which sharply decreases the amount of dust in the waste gas. The design and dimensions of the furnace are shown in Figures 1, 2 and 3. In appearance the furnace is similar to an open-hearth furnace of the same capacity. Fuel oil is simultaneously supplied to both burners and the gaseous combustion products pass from the working volume through both parts along vertical flues into slag pockets and then to recuperators, waste gas flies and the chimney. Each recuperator was of 34.5 m<sup>3</sup> in volume and

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317/133-59-1-6/23

Recirculation-type Recuperative Steelmaking Furnace

240 m<sup>2</sup> in heating surface area. The stream of burning hot oil is used as an injector for air from the recuperator which decreases air losses. Proportioning of the supply of oil, oxygen and air is done separately for each flame. Recuperators are protected from overheating by an automatic supply of air to the overtube space in order to decrease the waste-gas temperature. Unfortunately, the recuperators were made of an insufficient volume (70% of the necessary) and their cleaning during operation was impossible due to insufficient cross-section of flues between recuperators and slag pockets. For a normal prolonged operation of recuperators only 1-2 rows of tubes from a high refractory material are necessary, the remaining tubes could be made from chamotte. Operation of the recuperator will be described in a separate paper. The durability of recuperator, first campaign - 1 480 heats, second 1 082. Air and recuperators temperature are shown in Figure 4. Smelting of MSt3 killed steel in the furnace is described in some detail. Average technological indices of the heats are shown in the table; the dependence of the consumption of fuel and oxygen during charging and melting and of the duration of this period on the duration of

Card2/4

S.V/133-59-1-6/23

Recirculation-type Recuperative Steelmaking Furnace

charging is shown in Figure 5 and main characteristics of a heat in Figure 6. It is claimed that for the first time in steelmaking practice, the possibility of operation under industrial conditions of a recuperative furnace with ceramic recuperators capable of pre-heating air to 1 000 °C was demonstrated. The proving series of heats (68 heats) under conditions near to the normal operating conditions had the following mean operating indices (MSt.3 steel for a continuous casting machine): duration of one heat 2 hours 43 minutes, consumption of oil 176 kg/ton, consumption of oxygen 170 m<sup>3</sup>/ton of liquid steel; the yield of liquid steel 91-93%. The furnace is suitable for the production of killed steel MSt.3 (for a continuous casting machine) in quality equal to that produced in a basic open-hearth furnace. As the velocity of decarburisation can be varied within a wide range (from 2.0 to 0.36% hr), the furnace is particularly suitable for smelting low-carbon and specially soft steels (the sum of admixtures C + Mn + S + P < 0.07%). High productivity of the recirculation furnace led to a considerable economy in respect of the constant expenses and the cost of oxygen is more than covered by fuel economy. The overall cost of  
Card 3/4

SC7/135-#3-1-6/23

Recirculation-type Recuperative Steelmaking Furnace

steel does not exceed that in the normal open-hearth furnaces. Under operating conditions of the experimental furnace it was difficult to establish the economic efficiency of recirculating recuperative furnaces. It would be advantageous to build a 50-100 ton furnace capable of operating with oil and a gas of a high calorific value. There are 6 figures, 1 table and 4 references, 1 of which is German and 3 Soviet.

ASSOCIATION: Moskovskiy institut stali (Moscow Institute of Steel)

Card 4/4

Sov. J. Metall., 1978, No. 2

18(3)

AUTHORS: Glinkov, M. A., Serokhvostov, A. I.

TITLE: A Model Investigation of the Processes of Settling and  
Carrying-out of Dust in Steel-melting Furnaces (Issledovaniye  
na stende protsessov osedaniya i vysypaniya stileplavil'nykh  
pechakh)PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1978, Nr. 2,  
pp. 84-90 (USSR)ABSTRACT: The model of a steel-melting furnace was made of plexiglass  
on a scale of 1 : 15 (Fig. 1). The air supply working as a  
model of the gas circulation could be blown in, as in the  
original, as a direct current with unilateral and double  
return flow. To imitate the coarse-grained dust, water was  
introduced into the tank of the model, and air was blown  
in by a series of tubes under the water surface. The drops  
carried away were collected in 14 measuring points (Fig. 2)  
by means of rolls of filter paper. For the finer dust frac-  
tion, the metal level of the tank was reinforced by a metal  
foil with 2% porosity by which oxygenated air was blown  
out from beneath the foil in the form of a fine, dispersed  
jet when the air was blown under a pressure of 1 atm. (Fig. 3).

A Model Investigation of the Formation of Settling and Accumulation of  
Dust in Steel-Smelting Furnaces

Different conditions of combustion. In the furnace equipped with a unidirectional water flow, the maximum dust settling speed occurs at the flame in the center. Under these dust settling conditions, the dust settles on the lower part of the furnace walls. With the radial return flow, the majority of dust settling lies in the meeting point of the two flames; the settling of the coarse dust fraction increases considerably with time due to the fine dust. By reversing the flame, the dust settling does not increase, it decreases. In regular use of a gas return flow, only fine particles are carried out of the furnace. The maximum burning of the fuel in the furnace is produced by direct blowing of the wind on the surface of a single return flow. There are 7 figures.

ASSOCIATION: Tselkovskiy institut stali (Moscow Steel Institute)

SUBMITTED: July 11, 1958

Card 2,2

SV/153-59-6-57/41

AUTHORS: Glinkov, M.A., Doctor of Technical sciences and  
Glinkov, G.M., Candidate of Technical Sciences

TITLE: Some Thermotechnical Problems of Large Capacity Open  
Hearth Furnaces (Nekotoryye voprosy teplotekhniki  
bol'shegruznykh martenovskikh pechey)

PERIODICAL: Stal', 1959, Nr 6, pp 568-572 (USSR)

ABSTRACT: Possibilities of increasing the productivity of open  
hearth furnaces per unit of their capacity is  
discussed. It is considered that the higher the  
furnace capacity, the higher the quality of the solid  
charge should be. This would permit retaining the  
level of irradiation factor on decreasing of the  
ratio of the surface area of the bath to the furnace  
capacity (S/T). The higher the furnace capacity the  
higher the quality of the liquid iron or semiproduct  
should be as an increase in the thickness of the slag  
layer unavoidably deteriorates conditions of heat  
transfer. Sufficiently advantageous heat exchange  
conditions inside the solid charge and liquid bath can  
be obtained on retaining S/T constant with increasing

Card 1/4

SOV/133-59-6-37/41

Some Thermotechnical Problems of Large Capacity Open Hearth  
Furnaces

furnace capacity. In order to obtain this a different type of steelmaking furnace is necessary - with a working space up to 10 - 12 m wide, hanging roof and two-sided charging (with a corresponding change in the distribution of equipment in the shop). The higher is the laying down property of the flame and its luminosity at the end of the smelting space the lower is non-uniformity in the heat exchange along the length of the furnace. Therefore, on increasing the capacity of the furnaces, it is necessary to increase correspondingly the velocity of the fuel stream in order to obtain the required laying down capacity of the flame. In order to improve the flame luminosity at the end of the smelting space, it is necessary to use as a fuel or a carburising agent, heavy liquid fuels with a large ratio of C/H, on the decomposition of which complex hydrocarbon complexes are formed, securing stable luminosity of the flame.

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SOV/133-59-6-37/41

Some Thermotechnical Problems of Large Capacity Open Hearth  
Furnaces

A truly uniform heating of the baths of large furnaces can be obtained with a two-sided supply of fuel into the working space i.e. with simultaneous operation of two dog houses. On transferring an open hearth furnace on firing with oil or a cold gas of a high calorific value this problem can be solved easily by using three-channel dog houses (Fig 5). In each dog house either two side-channels or one central channel operates alternatively. The remaining three channels serve as waste gas flues to pass the waste gas to the regenerators - simultaneously through both dog houses. The movement of the gas in the working space will be mixed (counter-current and recirculation). As each dog house supplies through tuyeres the same amount of fuel, the heating conditions of both halves of the working space should be the same. All four regenerators are preheating air, the reversing system will be little changed. The separation of slag in slag pockets will be facilitated as due to the peculiar

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OV/133-59-6-37/41

Some Thermotechnical Problems of Large Capacity Open Hearth  
Furnaces

feature of the gas movement in the working space  
the carry over of the slag decreases. There are  
5 figures and 9 Soviet references.

Card 4/4

GLINKOV, M.A., prof., dokt.tekhn.nauk

Readers' response to A.D.Kliuchnikov's article "Method for  
a comparative evaluation of open-hearth furnace parts." Izv.  
vys.ucheb.zav.; chern.met. 2 no.8:179-181 hg '59.  
(MIRA 13:4)

1. Moskovskiy institut stali.  
(Open-hearth furnaces) (Kliuchnikov, A.D.)

MISS I BOOK EXPLOITATION 507/4732

231/205

MOSCOW. Institut stali  
Proizvodstvo i obrabotka stali i spivayov (Production and Treatment

of Steel and Alloys) Moscow, Metallurgist, 1960. (Series: Itas, Sbornik, 34), 2,100 copies printed.

**ED.** — Ye. A. Borod. **Ed.** of Publishers' House, S. L. Danner Tech.  
Ed. — M. R. Klimm. **Editor**, *Zalozhennye*, S. L. Danner Tech.  
Dobrov. **Professor**, Doctor of Technical Sciences, Head of Department, M. A. Lomonosov Moscow State University, Dept. of Physics.  
Doctor, Candidate of Technical Sciences, Associate Professor, Dept. of Physics.  
Doctor of Chemical Sciences, I. M. Vekilov. Professor, Dept. of Chemical Sciences, Institute of Technology, Moscow.  
Doctor of Technical Sciences, G. N. Kondratenko. Professor, Dept. of Technical Sciences, A. P. Lukashov. Professor, Director of Technical Sciences, Institute of Physics, Academy of Sciences of Belorussian SSR.  
Borod. Ye. M. Pavlov. Corresponding Member, Academy of Sciences of Belorussian SSR.  
Dobrov. and A. M. Pavlov. Corresponding Professors, Doctor of Technical Sciences.

**PURPOSE:** This book is intended for technical personnel in industry, scientific institutions and schools of higher education dealing with optical methods and apparatus, mainly visual, visual control, physical methods, metrology, and heat treatment. It may

also be used by students specializing in these fields.

CONFIDENTIAL DOCUMENTS OF THE FEDERAL BUREAU OF INVESTIGATION  
INVESTIGATING THE CRIMES OF THE COMMUNIST PARTY OF THE UNITED STATES  
AND THE COMMUNIST PARTY OF THE UNITED STATES (MILITANT SECTION)  
INVESTIGATING THE CRIMES OF THE COMMUNIST PARTY OF THE UNITED STATES  
AND THE COMMUNIST PARTY OF THE UNITED STATES (MILITANT SECTION)

**Yedzuris, R.J.**, Doctor of Technical Sciences [Department of Electromechanics]. Use of Oxygen and Complex Catalysts for Intensification of the Electric Furnace Melting Process of Construction Steels.

\* Ordov. V. I. Change of Gas Content in the Open-Hearth Bath During the Desulfurization and Holding Period

**Markov, B. I.** Candidate of Technical Sciences [Department of Metallurgical Processes]. Mechanical Analysis During Rolling Process of an Infinite Plate by Transforming the Heat Through the Molten Metal.

card 1/10

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000515410006-9"

S/46 J 7.3 07/02/1973, XZ  
AM 1, A 3.

AUTHORS: Glinkov, M. A.; Filimonov, Yu. P.; Kolyvanov, V. I.

TITLE: Thermal decomposition of gas containing methane in an oxidizing medium

PUBLISHER: Izdatelstvo vysokikh tehnicheskikh zavedeniy. Sverdlovskaya oblast, no. 7, 1960, 193 - 197

TEXT: A luminous gas flame radiates more heat than a non-luminous one and its luminosity is determined by the presence of carbon-black particles. The thermal decomposition reaction of methane without air accumulation has been studied (Ref. 1 F. Fischer, Brennst. Chemie, 1925, 1, 309; 1929, 10, 261. Ref. 2 and 3: see English-language publications), but in diffusion burning a high quantity of small volumes have a varying oxygen content, and two processes proceed at the same time - oxidation and thermal decomposition of methane. The laws of these processes have been studied at the Moscow Steel Institute. The test installation (Figure 1) consisted of heating zone (4) and cooling zone (7) for the gas-air mixture, an electrostatic precipitation vessel (6) and filters (5). The gas composition was: 52.0%  $\text{N}_2$ ; 9.3%  $\text{CH}_4$ ; 2.2%  $\text{H}_2$ ; 1.7%  $\text{O}_2$ ; 3.8%  $\text{CO}_2$ ; 1.5%  $\text{O}_2$ . Gal. 1/

(internal communication - 6/16/66)

S715 6/16/66 240217Z  
Air/U

and 1.0% hydrogen were added to cyclohexane (1) and the reaction mixture was heated to 1,00°C. The quantity of sooty carbon, the relative quantities of oxygen and nitrogen containing compounds, temperature, time and the volume of air were varied in different reactions. The temperatures in the reactor vessel were 1,00, 1,10, 1,20, 1,30 and 1,40°C. At 1,00°C the gas in the reactor vessel did not contain any oxygen, which proved that oxidation was over at 1,00°C. The CO content in the gas increased with the rise in temperature, and the CO<sub>2</sub> content decreased which is due to the CO<sub>2</sub> reduction reaction with C<sup>+</sup> formation and with oxidation after a low quantity of sooty carbon. More CO<sub>2</sub> and less CO formed when the air feed was increased. The reaction products in the precipitation vessel were a solid varying in color from yellowish-white to black, and the precipitated flakes having a strong naphthalene smell were a mixture of soot and hydrocarbon compounds. Benzene, naphthalene, anthracene and other compounds were extracted with petroleum ether, and asphaltenes with benzene. Figure 3 presents the calculation results showing that the content of methane decreases with a rise in temperature, and the hydrogen content increases with an increase in air feed. Soot, i.e., only carbon forms in combined oxidation and thermal decomposition of methane, i.e., in thermal decomposition of non-oxidized part of methane, with the formation of com-

Card 2/5

Thermal decomposition of gas....

S/148/6C/000/007/023/023/X

A161/A033

flex hydrocarbon molecules as transient compounds. 2) No strong effect of oxidation on the composition of the forming products was stated. A reduction of CO<sub>2</sub> to CO on account of carbon forming during the decomposition was observed, but no effect of this process on the quantity of the forming products was revealed. 3) The dilution of gas with the formed oxidation products results in some shift of the methane decomposition reaction temperature into higher temperature ranges. There are 4 figures and 3 non-Soviet-bloc references; The references to English language publications read as follows: P. V. Wheeler, W. L. Wood, Fuel, 1928, 7, 535; 1930, 9, 567; K. Koboyaschi, K. Yamamoto, Journ. Chem. Ind. Japan, 1935, 38, 550; 1934, 37, 785.

ASSOCIATION: Moskovskiy institut stali (Moscow Steel Institute)

SUBMITTED: Nov. 30, 1959

Card 3/5

S/148/C/000/009/025/025  
A161/A030

AUTHORS: Glukov, M A., and Tsay Yen Sir

TITLE: An experimental check of calculation methods for heating  
ingots in soaking pits

PERIODICAL: Izvestiya vuzovikh uchebnykh zavedeniy Chernaya metallurgiya,  
no. 9, 1960, 191-198

TEXT: The various existing theoretical calculation methods for heating  
metal in soaking pits are based on different assumptions, and the calcu-  
lation results are not always the same for the same cases. An experimental  
investigation has been carried out for a check. A scale model (1:15) of a  
soaking pit at the "Azerostal" works was built with two top burners. Ingots  
were heated with thermocouples imitating the real heating process; the gas  
temperature was also measured with a sucking thermocouple ("otsasyvayushch-  
aya termopara") in several spots in the work space and the mean temperature  
was calculated. In the ingots, the temperature was measured in the center  
of three portions with equal mass, and on the faces, and the mean was cal-  
culated. The obtained curves were compared with the curves obtained by

Card 1/2

An experimental check of calculation

S/148/60/000/009/025/025  
A16/A030

calculation per the methods: Fur'ye-Greber I.D.Semikin, G.P.Ivantsov; the method suggested by N.Yu.Tayts, D.V.Budrin, and V.N.Sokolov (Abstracter's note: Details of the listed calculation methods are not given). The conclusions are the following: 1) The calculation method by Fur'ye-Greber based on the assumption of constant heat release and heat conduction coefficients gave a distorted picture; splitting of the heating process into intervals does not ensure sufficient accuracy. 2) The graphical method of I.P.Ivantsov, used with a high number of stages gives results more or less near the real. 3) Determination of total soaking time by D.V.Budrin's method is near the real. 4) The calculation method as suggested by V.N.Sokolov (Ref.8 : Rasschety naグieva metalla (Metal Heating Calculations) Mashgiz, 1955) gives the best results, provided the temperature of the soaking pit changes little. This method is recommended for practical use. There are 4 figures and 8 Soviet book references.

ASSOCIATION: Moscow vskiy institut stali (Moscow Steel Institute)

SUBMITTED : April 1960

Card 2/1

GLINKOV, M.A., doktor tekhn.nauk; MEN'SHIKOV, R.I., kand.tekhn.nauk;  
KAGANOV, V.Yu., kand.tekhn.nauk; SOLOMENTSEV, S.L., inzh.

Automatic control of thermal and technological conditions in  
open-hearth furnace smelting. Biul. TSIICPM no 10:23-28 '60.  
(MIRA 15:4)  
(Open-hearth furnaces) (Automatic control)

GLINKOV, M.A.; FILIMONOV, Yu.P.; KРИVANDIN, V.A.

Flame emanation during the heating of methane containing gas.  
Izv. vys. ucheb. zav.; chern. met. no. 11:149-155 '60.  
(MIRA 13:12)

1. Moskovskiy institut stali.  
(Methane--Combustion)

S 118/60,000 7/12 018 010  
A101 211

AUTHOR: Glazkov, M. A.

TITLE: The problem of the open-hearth furnace productivity indices  
(As a discussion)

PERIODICAL: Izvestiya vysshikh uchebnykh zavodov. Chernaya metalurgiya,  
no. 12, 1960, 135 - 138

TEXT: The old practice of rating the output of open hearth furnaces by the specific productivity (ton/m<sup>2</sup> per day) has become obsolete in view of the fact that in relatively small furnaces below 100-ton capacity the specific productivity with area varied little, from 1.1 to 1.6%, but in the modern 400 - 500-ton furnaces it reached 5.0 - 5.4%. Besides this, the productivity is different at different plants and individual furnaces, and the specific productivity figures are lower for larger furnaces in view of the known fact that the plant exchange conditions are unfavorable. The author discusses several suggestions that have been made by other authors of ton/ton<sup>2</sup>, and refers in particular to the "ton/ton of charge per year" index suggested by D. A. Smolyanich, N. I. Yefanov et al. (Znf. i Stal., 1959, no. 7, 604).

Conf. 4

S 1113/60/000 C 111/010, 020

A 1/1 A 1/2

The profile of the open-hearth furnace.

(OJ) which considers more appropriate for the present stage of the open-hearth process. In their investigation the authors utilized an open-hearth furnace (a ton of charge per hour) (Ref. 1; M. A. Blankin, G. M. Il'inskaya, Sov. Stal', 1971, No. 1, 568 - 572). The article includes a table illustrating the operation of eight furnaces at four Soviet plants - Magnitogorsk Metallurgical Combine (MKK) (Magnitogorsk Metallostroy Plant); Krasnogorsk metallurgicheskij kombinat (KM) (Krasnogorsk Metallurgical Plant); Nizhne Tagil'skij metallurgicheskij kombinat (NTMK) (Nizhne Tagil Metallurgical Combine); Alchevskij metallurgicheskij zavod (AMZ) (Alchevsk Metallurgical Plant). The discussion suggests that in the foreign practice (Russia in calendar time), a system of "current practice" taking into account the peculiarities of individual furnaces. The author is of the opinion that the taking into account of such coefficients would lead to above and complete confusion in rating the furnace productivity, but two others he accepts as being of importance, viz. the oxygen coefficient, in some case, the metal grade being smelted. The author's conclusions: 1) Production in time unit per ton capacity is a more indicative value under certain conditions than production per square meter hearth area.

Cart 2.

The problem of the open-hearth furnace...

5/14/87/ccc/c12/015/020  
2161/4133

2) An index showing the heat work must be accepted, i.e. "kg/t-air", or "ton/ton a day". 3) Comparison per calendar time is wrong for the heat work of a furnace since the shop conditions are not comparable. The conditions can be accounted for with the "extensivity factor". 4) The effect of the furnace heat work on the "extensivity factor" (the effect of the furnace life) exists, but it appears to be less marked than the effect of the maintenance organization and other factors that are not taken into account, and may be disregarded. 5) Furnaces working with oxygen or air, silicon, manganese must be compared in separate groups. There is 1 table and 4 Sovi tables references.

ASSOCIATION: Moskovskiy institut stali (Moscow Steel Institute)

SUBMITTED: August 18, 1952

Емкость печи, т	200	200	250	250	400	400	400	500
Завод и печа	ММК-А	КМК-Б	ММК-В	ММК-Г	КМК-Д	КМК-Е	НТМК-Ж	АМЗ-3
Card 3/5	65,7	71,4	73,8	73,4	75,4	71,4	81,4	96,7

GLINKOV, M.A., doktor tekhn.nauk

Thermotechnical problems in automatic control of furnaces. Mekh.i  
avtom.proizv. 14 no.5:15-18 My '60. (MIFI A 14:2)  
(Furnaces) (Automatic control)

"APPROVED FOR RELEASE: 09/24/2001

CIA-RDP86-00513R000515410006-9

AKSEL'RUD, L.G.; GLINKOV, K.A.; GLEBOVICH, V.N.; LIPSHIS, A.Y.; MANTSEV, I.M.

Prospects for improvements in the design of heating and heat-treating furnaces. Stal' 20 no.6:562-567 Je '60. (IZI 14:2)  
(Furnaces, Heating) (Furnaces, Heat-treating)

APPROVED FOR RELEASE: 09/24/2001

CIA-RDP86-00513R000515410006-9"

GLINKOV, M.A., doktor tekhn.nauk, prof.

Fifty years of existence of the Scientific Technological Society  
of Ferrous Metallurgy. Stal' 20 no.11:961-962 N '60.  
(MIRAIJ:10)

1. Chlen TSentral'nogo pravleniya nauchno-tehnicheskogo obsh-  
chestva chernoy metallurgii.  
(Iron-Metallurgy)

GLINKOV, M.A., prof., doktor tekhn.nauk, red.; KONDAKOV, V.V., prof., doktor tekhn.nauk, red.; KUDRIN, V.A., detsent, kand.tekhn. nauk, red.; OYKS, G.N., prof., doktor tekhn.nauk, red.; YAVOYSKIY, V.I., prof., doktor tekhn.nauk, red.; BORKO, Ye.A., red.; GROMOV, N.D., red.izd-va; KARASEV, A.I., tekhn.red.

[New developments in the theory and practice of making open-hearth steel] Novoe v teorii i praktike prichvodstva martenovskoi stali. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1961. 439 p.

(MIRA 14:4)

1. Moscow. Institut stali. 2. Moskovskiy institut stali (for Glinskoy, Kudrin, Oyks, Yavoyaskiy).  
(Open-hearth process)

DIOMIDOVSKIY, Dmitriy Aleksandrovich, prof., doktor tekhn.nauk; GLINKOV, M.A., prof., doktor tekhn.nauk, retzessent; MIKHAYLENKO, A.Ya., red.; ARKHANGEL'SKAYA, M.S., red.izd--va; DOBUZHINSKAYA, L.V., tekhn.red.

[Metallurgical furnaces in nonferrous metallurgy] Metallurgicheskie pechi tsvetnoi metallurgii. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1961. 728 p.

(MIRA 14:6)

(Metallurgical furnaces)  
(Nonferrous metals--Metallurgy)

S/137/61/000/011/011/123  
AC60/A101

AUTHOR:

Glinkov, M.A.

TITLE:

Thermotechnical problems in the automatic regulation of furnaces  
Referativnyy zhurnal. Metallurgiya, no. 11, 1961, 1<sup>st</sup>, abstract  
11B84 (V sb. "Novoye v teorii i praktike proiz-va martenovsk. stali".  
Moscow, Metallurgizdat, 1961, 202-209, Discussion, 332-334)

PERIODICAL:

A distinctive peculiarity of furnaces is the interaction between  
the thermotechnical and the technological processes. An improvement in the auto-  
matic regulation of furnaces has a huge effect, since furnaces hold the first  
place in power consumption, and the coefficient, since furnaces hold the first  
making an improved system of automatic regulation of the average. The main difficulty in fur-  
naces is the close interdependence of the thermal and operation of the  
processes. The course of the technological processes in heat-exchanger furnaces  
is related in a well-defined fashion with the dynamics of heat assimilation. The  
heat assimilation is the parameter which as-if connects the domain of technology  
with that of thermotechnics. A basic dynamic equation is derived for describing  
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Thermotechnical problems ...

S/137/61/000/011/011/123  
A060/A101

the thermal operation of a furnace:  $Q_{TL}(\tau) = \frac{1}{\eta_{UT}(\tau)} [\Delta i(\tau) \cdot D(\tau) + Q_{esc}^M(\tau) - C_M(\tau)]$  where  $Q_{TL}$  is the thermal load of the fuel combustion, in kilocalories per hour;  $\eta_{UT}$  is the coefficient of useful heat utilization of the furnace;  $D$  is the furnace productivity in kg/hr,  $\Delta i$  is the function characterizing the technologically required heat expenditure for the material undergoing the heat-treatment, taking account of the thermal effect of any reactions in the material, in kilocalories/kg;  $Q_{esc}^M(\tau)$  is the function characterizing the chemical and physical heat of the escape products from the combustion of gaseous products of the technological processes, in kilocalories per hour;  $C_M(\tau)$  is the function characterizing the behavior of the heat on account of the chemical and the physical heats of the gaseous products on the technological processes, in kilocalories/hour. Three principal methods of solving problems of the automatic regulation of the thermal operation of furnaces are considered: the analytic, the semi-empirical, and the empirical. It is noted that the design of systems for automatic regulation of furnaces is most often based upon the physical approach to the thermotechnical problems of regulation. It is proposed that special attention

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Thermotechnical problems ...

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A60/AIC1

... are paid to the elaboration of the analytic theory of the thermal operation of various furnaces as a basis for developing the intelligent control of furnace regulation.

I. Foreign

[Abstracted from: Complete translation]

✓

Card 3/3

GLINKOV, M.A.; PORTNOV, A.A.

Flame testing of chambers with a vortex flow of gases and a water-cooled receiver in the center near the surface of the brickwork. Izv. vys.ucheb.zav.; chern.met. 4 no.5:184-188 '61. (MIRA 14:6)

l. Moskovskiy institut stali.  
(Metallurgical furnaces--Testing)

GLINKOV, M.A.; STEPANOV, Ye.M.

Thermal ionization in flame and combustion intensification by  
the field of force. Izv.vys.ucheb.zav.; chern.met. 4 no.9:143-  
152 '61. (MIRA 14:10)

(Ionization) (Combustion)

GLIMOV, I.A.; TSYK V.N.

Differences in the optical characteristics of the aerodynamics and the  
aerodynamics in aircrafts. (Aero. vys. i zhid. sverkh. chern. 1961, No. 1, p. 12.  
S. V. Chernov, N. V. Tsyk, V. I. Glimov) (NTIS AD-2)

I. Kolkovskii, L. S. Kharlamov  
(Furnaces, etc., etc.) (Ultratransmission)

GLINKOV, M.A.; REKHMAN, A. Ya.

Effect of aerodynamics on dust deposition in slag basins and vertical flues. Izv.vys.ucheb. zav.; chern. met. no.3:161-171 '61.

(MIRA 14:3)

l. Moskovskiy institut stali.

(Metallurgical furnaces—Aerodynamics)

S/145/61/003/003/314/015  
AMSI/AIRR

AUTHORS: Glinko, M. A., Romin, A. A.

TITLE: The gas mechanism in several furnaces for rapid steel heating

PERIODICAL: Izvestiya vsesoyuznogo tekhnicheskogo zashchitnogo Chernavskogo metallurgicheskogo zavoda, no. 3, 1961, 172 - 183

TEXT: A detailed description is presented of tests with rapid-heating cyclone type sectional furnaces with burners discharging hot gas directly on the face of square billets. The size was studied in furnace models with the aid of water and dye, and with air. Various chamber dimensions and different outlet duct dimensions were tested. The test billets were of round and square shape. The article includes diagrams showing the flow spaces in and around different spots of the chambers and calculations. This is followed by a schematic view of the flow in a chamber with burners in the center of a set of billet tanks. Conclusion: The cyclone motion creates a turbulent ignition zone and intense burning of gas-air mixture, and the fuel-mixture ignites and in the heating process at high temperature in the lining and high heat in the furnace space, which in combination results in an intense heat transfer with the furnace interior. Drawing shows a drawing

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<sup>3</sup>/140/10, 10/10/1977, p. 5.

The gas under the conditions of Fig. 1 is at a temperature of  $10^{\circ}\text{C}$ .

non-uniform heating in square billets or in billets with large diameters with large flamelets may be reduced to a minimum by using a large number of the small flamelets which allows the flow speed at the outer edge to increase the zone of laminar flow. It is only possible to obtain a homogeneous heat heating of square billets over the entire surface in a cyclone chamber if the heat transfer from the faces into the center of billet by heat conduction is larger than that from the flow. The highest heat supply to surfaces in the case of laminar heat transfer from surface to the billet body is achieved when the gas jets are directed to the center of the billet faces, and this arrangement provides more even heating over the entire surface. In cyclone chambers of small diameter the laminar zone at the billet is absent. The gas speed at the billet surface is very high and the heat transfer by convection is more intense. The most favorable type of burner tips is of small diameter and with partition walls. The range of operating and its selection references.

ASSOCIATION: Moskovskiy Teatral'nyj sal' (Moscow State Theatre)

SUBMITTED: June 21, 1971

Card 2/2

11.72<sup>00</sup>  
JCS/2  
S/148/61/000/009/011/012  
E111/E135

AUTHORS: Glinkov, M A., and Stepanov, Ye M.

TITLE: Thermal ionization in a flame and intensification of combustion by applying an electric field

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy.  
Chernaya metallurgiya, no.9, 1961 143-152.

TEXT: Stable combustion, with branching of chains, begins after the production of a definite concentration of free radicals and ionized particles. The initial energy impulse (whose magnitude depends on the energy barrier of the fuel molecules) leads to ionization and free-radical formation and the branching-chain combustion reaction. In the present work the authors report and discuss their experiments on combustion from the ionization aspect. The main part of the experiments was on pre-mixed air/gas mixtures with an excess-air coefficient of unity. [Abstractor's note: I think this means with the stoichiometric proportion of air for complete combustion.] with gas flows of 0.24, 0.52 and 0.72 nm<sup>3</sup>/hour and a burner bore of 15 mm. At all the gas flows the ratio of visible-flame length to length of inner

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30382

S/148/61/000/009/011/012

E111/E135

Thermal ionization in a flame ...

cone was equal to 2.2. To prevent detachment of the flame a little gas was added through an annular gap near the burner mouth. The ionization characteristics were measured every 10 mm along the flame, at 5-6 radial points at each level. Measurements were also made when the gas/air mixture had not been pre-mixed additional investigation then being made of the effect of preheating of the gas (to 200, 400, 600 and 750 °C) on ionization and temperature in the flame. Ionization was found by measuring flame conductivity using two 2-mm diameter diametrically opposed stainless-steel probes insulated in quartz tubes. The amplified current was measured with a micro-ammeter - the ionic concentration was not calculated. Temperature was measured with a platinum platinum-rhodium thermocouple. The ionization maxima were found to be close to the temperature maxima. From the observed changes of ionization and temperature up the flame it is concluded that in the initial part of the flame rapid ionization is produced due to rapid temperature rise - here there are considerably more ionized than reacting molecules. After reaching a maximum, ionization falls rapidly, while temperature continues to rise until heat

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30682

S/148/61/000/009/011/012

E111/E135

Combustion in the flame

influence the surroundings leads to a slow fall. In this region the flame is consumed only for maintaining temperature; the burning rate is limited by the arrival of fresh fuel molecules. Temperature versus ionization plots show hysteresis loops whose areas represent the amount of heat released in the combustion of a given quantity of fuel ions. Since the calorific value of the gas is a constant, the ratio of gas flows shows the relative amounts in heat evolution at different flows: the ratios agree completely with the ratio of the corresponding hysteresis-loop areas. Without pre-mixing but with preheating the ionization maximum increases gradually with fuel flow  $V$  according to

$$\text{max } I \propto V^{\alpha}$$

where  $\alpha = 0.5$ . This is the initial ionization of molecules, depending on the initial temperature or other form of ionizing energy, and also on the fuel. It depends on the fuel (0.31 and 0.58 for the fuel used in the experiments of order and over 700 °C, respectively). Combustion can be intensified by moving the ionization maximum towards the flame front in the flame by applying any form of energy at the root. This was observed in experiments in which the heating rates of

30692

S/148/61/000/009/011/012  
E111/E135

Experiments were conducted with the same heating area at different frequencies of the alternating current with and without the application of an axial magnetic field. It is noted, no information on the effect of the frequency of the field on its application is given]. Although the alternating current is applied over the field, the effect is not uniform. The temperature distribution in the bath is not uniform. The effect of the alternating current on the heating fuel flow. Heat transfer from the bath to the metal melt was also increased (by a maximum of 20-25%). The heat transfer rate of a iron bath was increased 20-25% by the alternating current. The gas flow in this experiment was considered to be turbulent. The current was not to be regarded as an important factor in the process. The alternating current is a means of concentrating the heat transfer in the melt and in the fuel.

Report prepared by  
Professor V. A. Kuznetsov (Head of the Moscow Steel Institute)  
B.M. [unclear]  
X

GLINKOV, M.A., doktor tekhn.nauk, prof.; DEMIN, G.I., kand.tekhn.nauk, dotsent

Operation of recirculating-type recuperative steel smelting furnaces.  
Stal' 21 no. 4:317-318 Ap '61. (MIA 14:4)

I. Moskovskiy institut stali.  
(Smelting furnaces)

"APPROVED FOR RELEASE: 09/24/2001

CIA-RDP86-00513R000515410006-9

GLINKOV, M.A., doktor tekhn.nauk,prof.; GLINKOV, G.M., kand.tekhn.nauk

Response to A. D. Kliuchnikov's remarks. Stal' 21 no.6:566 Je '61.  
(MIRA 14:5)

(Open-hearth furnaces—Design and construction)

APPROVED FOR RELEASE: 09/24/2001

CIA-RDP86-00513R000515410006-9"

GLINKOV, M.I.; GLINKOV, G.M.

Role of heat generation in open-hearth furnace baths.  
Stal' '1 no.8:751-753 Ag '61. (MFB. 14:9)  
(Open-hearth furnaces)

GLINKOV, M.A.; RASPUTIN, A.YA.; REVEDOMSKAYA, E.N.

Gas flow and resource distribution in multichamber holding  
Purification. Metal 22 no 1-82 p 6 Jan '82

I. Nekrasovskiy institut stali  
Tiumen, Sverdlovsk oblast

3/18/62/000/006/071/232  
2295/2308

AUTHORS: Glinkov, M.A., Men'shikov, R.I., Kaganov, V.Yu., and Solomentsev, S.L.

TITLE: Development of a complex automatic system for controlling the thermal and technological operating conditions of fusion in open-hearth furnaces using computer equipment

PERIODICAL: Referativnyj zhurnal. Avtomatika i radiotekhnika, no. 6, 1962, abstract 6-2-200 u (V sb. Primeneniye vychisl. tekhn. dlya avtomatiz. proiz-vya, M., Mashgiz, 1961, 225-237)

TEXT: Work carried out at the Department of Metal Furnaces of the Moskovskiy institut stali (Moscow Steel Institute) in 1957-58 has shown the possibility of designing a closed-loop controller of the thermal operating conditions of an open-hearth furnace, where technological and organization factors are taken into account. The block diagram of a computer-type automatic control system has been developed in which the controlled parameter is the heat absorbed by

Card 1/3

3/14/62/00/003/071/232

9247/D408

Development of a complex automatic ...

the bath. In practice the heat absorbed by the bath is determined by the computer from the behavior of fusion by proceeding from the difference between the heat input (the combustion of carbon being allowed for) and the quantity of heat carried away by the products of combustion and expected for thermal reasons. In the program unit of combustion and expected for thermal reasons. In the program unit of heat absorption is assigned according to the behavior of combustion period of fusion. The set value of heat absorption for a given instant of fusion is worked out by the program unit according to the quantity of heat that must be transmitted to the bath up to the end of the period, according to boiling conditions, carbon-combustion rate and other factors. The difference between the actual and the set value of heat absorption determines the heat load assigned to the regulator. The regulating system is of the closed-loop type with respect to the basic parameters - heat absorption. The rate of liberation of carbon oxides from the bath, the volume of the combustion products and the in-flow and out-flow of air from the working space are determined according to the consumption of fuel, air consumption, total composition of the combustion products and by the result of measurement of their quantity in the general flue. Data obtained in the computer unit on heat absorption and carbon combus-

Card 2/3

1/15/1971 6/671/242

Development of a complex automatic ... 7155/P608

tion, can be used for controlling flame reversing and for regulating the pressure in the working space. Since several quantities depend on the process, a multi-line recorder is introduced in the computer unit, intermediate and final calculations are checked periodically in the circuit by means of short measurements of the corresponding parameters. The computing program requires a large number of measurements some of which are difficult to carry out under conditions of open-hearth furnace production. Therefore a simplified procedure was developed in 1958-59 for determining the heat absorbed by the bath and the rate of combustion of carbon. 6 figures. [Abstracter's note: Complete translation.]

Card 3/3

GLINKOV, Mark Alekseyevich; VAGIN, A.A., red. izd-va; SUSHKIN, I.N.,  
red. izd-va; MIKHAYLOVA, V.V.; tekhn. red.

[Principles of the general theory of furnaces] Osnovy obshchey  
teorii pechei. Izd. 2., ispr. i dop. Moskva, Metallurgizdat,  
1962. 575 p. (MIRA 15:9)  
(Metallurgical furnaces— Design and construction)

GLINKOV, N.A.; PROSYANOV, Yu.F.

Effect of the properties of liquid fuel on the luminosity of  
open-hearth furnace flames. Izv. vys. ucheb. zav.; chern. met.  
5 no.5:170-180 '62. (MLN. 15:6)

1. Moskovskiy institut stali i izhorskij zaved.  
(Liquid fuels)  
(Open-hearth furnaces—Combustion)

GLINKOV, M.A.; SEROKHVOSTOV, A.L.

Mechanics of gases in the hearth of a uniflow and recirculating type steel smelting furnace. Izv. vys. uchet. zav.; chern. met. 5 no.7:188-195 '62. (MIRA 15:8)

1. Moskovskiy institut stali i splavov.  
(Smelting furnaces) (Gas flow)

GLINKOV, M.A.; D'YACHKOV, B.G.

Connection between ionization and heat emission during the burning  
by torch of methane-bearing gas. Izv.vys.ucheb.zav.; chern.met.  
(MIRA 15:12)  
5 no.11:181-187 '62.

1. Moskovskiy institut stali i splavov.  
(Gas torches) (Ionization of gases)

GLINKOV, M.A., prof., doktor tekhn.nauk; PROSYANOV, Yu.P., inzh.

Effect of liquid fuel properties and the design of atomizers  
on heat processes in open-hearth furnaces. Stal' 22 no.7:653-658  
(MIRA 15:7)  
Jl '62.

1. Moskovskiy institut stali i Izhorskij zavod.  
(Open-hearth furnaces--Design and construction)

GLINKOV, M[A] prof. doktor tekhn.nauk; MITKALINNYY, V.I., dotsent, kand.  
tekhn.nauk; KHE YU-TSZIN' [Ho Yu-chin]

Characteristics of aerodynamics in 600 and 900-ton open-hearth  
furnaces with single-channel ports. Stal' 22 no.11:1051-1055  
(MIRA 15:11)  
N '62.

1. Moskovskiy institut stali.  
(Open-hearth furnaces--Aerodynamics)

RUDRIN, Dmitriy Vasil'yevich; GLINKOV, Mark Alekseyevich, prof.,  
doktor tekhn. nauk; KUZ'MIN, Mikhail Aleksandrovich;  
EL'CHIKOV, Liveriy Alekseyevich; SEMIKIN, Iosif' Denilovich;  
TROYR, Samuil Grigor'yevich; SAMIKOV, A.P., red.izd.-va;  
ISLEN'TYEVA, P.G., tekhn. red.

[Metallurgical furnaces] Metallurgicheskie pereh. [By] D.V.  
Rudrin i dr. Moskva, Metallurgizdat. Pt.1. [Fuel, refractories,  
principles of heat engineering processes] Teplivo, ogneupory,  
osnovy perechnoi teplotekhniki. 1963. 436 p. (MIRA 16:10)  
(Metallurgical furnaces)

GLINKOV, M.A.; D'YACHKOV, B.G.

Comparison of certain burner arrangements by their ionizing  
characteristics. Izv.vys.ucheb.zav., chern.met. 6 no.1:172-184  
'63. (MIRA 16:2)

1. Moskovskiy institut stali i sloyov.  
(Gas burners) (Ionization of gases)

GLENKOV, M.A.; SEROKHOVOSTOV, A.L.

Mixing of flows in blast furance hearths with uniflow and  
recirculation. Izv. vys. ucheb. zav.; chern. met. 6 no.3:  
203-208 '63. (MIRA 16:5)

1. Moskovskiy institut stali i splavov.  
(Blast furances—Combustion) (Gas flow)

GLINKOV, M.A.

Results of the inter-universit, conference on methods of calculating  
metallurgical furnace efficiency. Izv. vys. ucheb. zav.; chern. met.  
6 no.5:135-187 '63. (MIRA 16:7)

1. Moskovskiy institut stali i splavov.  
(Metallurgical furnaces) (Heat--Transmission)

OLINOW, Max

Days of developing method of calculating furnace efficiency.  
Inv. no., 1968, Savo; elev. met. o no. 9189-193 (U).  
(MERA 16:11)  
To: "Max Olinow Institute of Technology"

GLINKOV, M.A.; STUL'PIN, Ye.A.

Heat generation in steel smelting in blast furnaces. Izv. vys. uchet. zav.; Chern. metal. o. metall 223-229  
'63. (MIRA 17:3)

1. Moskovskiy institut stroit. i stroitelei.

GLINKOV, M.A., prof., doktor tekhn.nauk

Interuniversity conference on methods of calculating the efficiency  
of metallurgical furnaces. Stal' 23 no.3:286-287 Mr '63.  
(MIRA 16:5)

1. Moskovskiy institut stali i splavov.  
(Metallurgical furnaces)

METALLURGII, Vsevolod Davidovitch; AKBUSHIN, Nikolai Nikolaevich;  
VALERCHENKO, Aleksander Ivanovich; et al. 1971, 2nd edition;  
GLINKOV, M. I., pref. "Aeroflotavia, Moscow, 1971."

(Metallurgical formulas; an atlas) Metallurgicheskie rechi;  
atlas. Izd.R., Peter. Izdav. Metallurgiya, Leningrad. 219 p.  
Plans for the atlas "Metallurgicheskie rechi." In: "Metallurgicheskie rechi," atlas. (1971)

GLINKOV, M.A.; KAGANOV, V.Yu.; BLINOV, O.M.

Obtaining information necessary for the optimum control of  
thermal conditions in furnaces. Izv. vys. ucheb. zav.; chern.  
met. 7 no.1:162-165 '64. (MIRA 17:2)

1. Moskovskiy institut stali i splavov.

GLINKOV, M.A.; STUL'PIN, Ye.A.

Oxidizing properties of 500-ton open-hearth furnaces during  
the smelting period. Izv. vys. ucheb. zav., chern. met., 7  
no.1:174-177 '64. (MIRA 17:2)

1. Moskovskiy institut stali i splavov.

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CIA-RDP86-00513R000515410006-9

GLINKOV, M.P., Director of the Central Statistical Bureau, Ministry of Finance, Moscow;  
V.I., inzer.; V.I.L., Director of the Central Statistical Bureau, Moscow; G.M., inzer.

A multi-line experimental document from the Soviet Statistical Bureau.  
Content is unproven. It is believed to be a test of a new type of document.

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